

Amended Claims - Clean Copy Without Markings

1. (Five times amended) A transformer core comprising a plurality of segments, each of which comprises of a plurality of packets, said packets each comprising a pre-determined number of groups of cut amorphous metal strips arranged in a step-lap joint pattern, each of said segments having been formed and annealed and said core having been assembled from said annealed segments.
4. A transformer core according to claim 1 wherein at least one core segment has a C-segment, I-segment or straight segment construction.
7. A transformer core according to claim 1, wherein edges of each of said core segments are coated with a bonding material that protects said edges and imparts increased mechanical strength.
14. A transformer core according to claim 1, comprising two C segments.
15. A transformer core according to claim 14, comprising two C segments and an even number of straight segments.
16. A transformer core according to claim 1, comprising four C segments arranged to form a shell-type core.
17. A transformer core according to claim 1, comprising two C segments and one I segment arranged to form a shell-type core.
18. A transformer core according to claim 1, comprising two C segments, one I segment and an even number of straight segments arranged to form a three-leg transformer core.
20. A transformer core according to claim 1, wherein at least one core segment has a cruciform shaped cross-section.

25. A transformer core as recited by claim 1, wherein each of said amorphous metal strips has a composition according to the formula: $M_{70-85} Y_{5-20} Z_{0-20}$, subscripts in atom percent, where "M" is at least one of Fe, Ni and Co, "Y" is at least one of B, C and P, and "Z" is at least one of Si, Al and Ge; with the provisos that (i) up to 10 atom percent of component "M" can be replaced with at least one of the metallic species Ti, V, Cr, Mn, Cu, Zr, Nb, Mo, Ta and W, and (ii) up to 10 atom percent of components (Y + Z) can be replaced by at least one of the non-metallic species In, Sn, Sb and Pb.
28. (Amended) For use in a segmented transformer core, a transformer core segment comprising a plurality of packets, each of which comprises a pre-determined number of groups of cut amorphous metal strips arranged in a step-lap joint pattern, the segment having been formed and annealed and the segment being adapted by the presence of said pattern to be joined in a step-lap joint in said segmented transformer core.
29. An annealed transformer core segment according to claim 28 having a C-segment construction.
30. An annealed transformer core segment according to claim 28 having an I-segment construction.
31. An annealed transformer core segment according to claim 28 having a straight segment construction.
32. An annealed transformer core segment according to claim 28 further comprising a bonding material adhered to edges of said annealed transformer core segment.
33. An annealed transformer core segment according to claim 28 wherein each of the amorphous metal strips has a composition according to the formula: $M_{70-85} Y_{5-20} Z_{0-20}$, subscripts in atom percent, where "M" is at least one of Fe, Ni and Co, "Y" is at least one of B, C and P. and "Z" is at least one of Si, Al and Ge; with the provisos that (i) up to 10 atom percent of component "M" can be replaced with at least one of the metallic species Ti, V, Cr, Mn, Cu, Zr, Nb, Mo, Ta and W, and (ii) up to 10 atom percent of

components (Y + Z) can be replaced by at least one of the non-metallic species In, Sn, Sb and Pb.

34. A transformer comprising a transformer core according to claim 1.

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35. An oil cooled transformer comprising a transformer core according to claim 1.

36. A transformer according to claim 34 having a duty rating of from 100 KVA to 500 MVA.

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37. A process for the production of a transformer core from a plurality of individually annealed core segments which process comprises the steps of:

providing a plurality of metal strips,

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stacking said amorphous metal strips to form a core segment comprising at least one packet which includes a plurality of groups of amorphous metal strips arranged in a step-lap joint pattern;

optionally forming said stacked amorphous metal strips to form a C-segment or an I-segment;

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subsequently annealing said core segment;

subsequently assembling a transformer core by mating joints of at least two annealed core segments.

38. The process according to claim 37 wherein the core segment is annealed in the presence of a magnetic field.

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39. The process according to claim 37 which includes the further process step of:

adhering a bonding material to edges of the annealed core segment.

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